PROJECT PRONTO
PRODUCT OVERVIEW

March 1, 2000

One Bell Plaza

Concourse Auditorium

PRONTO: PRODUCT OVERVIEW
OUTLINE

- **INTRODUCTION**

- **EXPLANATION OF INFRASTRUCTURE**
  - NON-DLE INFRASTRUCTURE
  - DLE INFRASTRUCTURE

- **SBC REQUEST FOR INTERPRETATION OF MERGER CONDITIONS**

- **DLE UNBUNDLING PLAN**
  - Explanation of PRONTO Unbundled Network Elements (UNEs)

- **DLE HIGH LEVEL SERVICE ORDER FLOW**

- **NOTE:** The material contained within this document is in draft format. SBC reserves the right to change and/or alter the products and processes outlined within in this document.

PRONTO: PRODUCT OVERVIEW
INTRODUCTION

- **SBC REQUEST FOR INTERPRETATION OF MERGER CONDITIONS:** SBC recently has requested an interpretation of merger conditions by the FCC in regards to the Project PRONTO infrastructure deployment within SBC.

- **MEETING PURPOSE:** The purpose of this discussion is to outline to the CLEC community the new products that the SBC ILECs are developing in conjunction with the PRONTO infrastructure and in order to explain the logic behind SBC's request for interpretation of merger conditions.

- **ASSUMPTIONS:** The products outline in this presentation are based upon the assumption that SBC receives the interpretation of the merger conditions allowing SBC to own both the OCD and the ADLU (DSL line card) in the remote terminal. Both of these elements will be explained in detail in this presentation.

PRONTO: PRODUCT OVERVIEW
INTRODUCTION

- **PROJECT PRONTO:** PROJECT PRONTO is designed to increase the reach of xDSL services to end users throughout the SBC 13-state region. This project consists of the placement of digital loop carrier (DLC) systems in new and existing remote terminals. This serves to shorten loop lengths, limit the impacts of loop conditioning and increase the availability of DSL service to consumers.

- **UNBUNDLING PLAN:** The PROJECT PRONTO unbundling plan is a work effort within the Wholesale Marketing division of SBC to provide unbundled access to the infrastructure being deployed under PROJECT PRONTO. The infrastructure itself will belong to the SBC TELCOs and will be provided on a leased basis to CLECs interested in providing DSL services over this infrastructure.

- **DLE:** PROJECT PRONTO is typically referred to within SBC as the Digital Loop Electronics environment or "DLE".

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INFRASTRUCTURE

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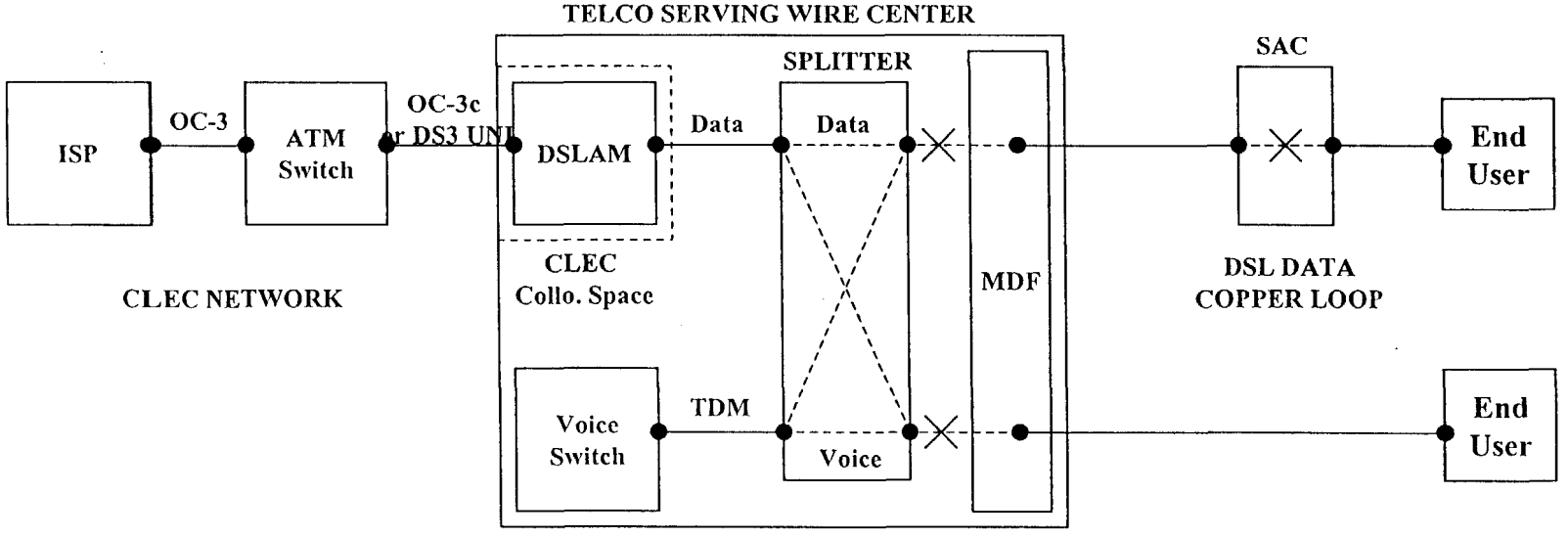
NON-DLE INFRASTRUCTURE

- **DEFINED BY THE FOLLOWING:**
  - Traditional DSL environment
  - Central office based DSLAMS
  - UNE xDSL capable loops

- **HIGH LEVEL DIAGRAM:**



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NON-DLE INFRASTRUCTURE

- **LIMITATION OF NON-DLE INFRASTRUCTURE**
  - Availability of DSL service is limited by loop length and conditioning

- **SOLUTIONS TO LOOP LENGTH AND CONDITIONING LIMITATIONS IN NON-DLE ENVIRONMENT**
  - Shorten loop lengths by placing DSLAMS in the remote terminals
  - Requires collocation of DSL equipment in new and existing CEVs and Huts if space and environmental capacity is available.
  - Requires dark fiber from Serving Wire Centers to the remote terminals where available.
  - Requires collocation of DSL equipment in the serving wire center.

- **ALTERNATIVE SOLUTION:** DIGITAL LOOP ELECTRONICS (DLE)

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DLE - INFRASTRUCTURE

- **ELEMENTS NECESSARY TO PROVISION xDSL- DLE:**
  - Remote Terminal Equipped with Digital Loop Carrier (DLC) Systems.
  - Remote Terminal Combo Cards (ADLU) to Provide DSLAM Functionality
  - Remote Terminal (RT) Derived UNE Sub-Loops
  - DLC Central Office Terminal Equipment
  - Dedicated OC-3c Transport for Voice and Data from the RT to the Central Office
  - An Optical Concentrator Device (OCD) for Inbound Data Traffic
  - Access to ATM Capacity Via Interoffice Facilities

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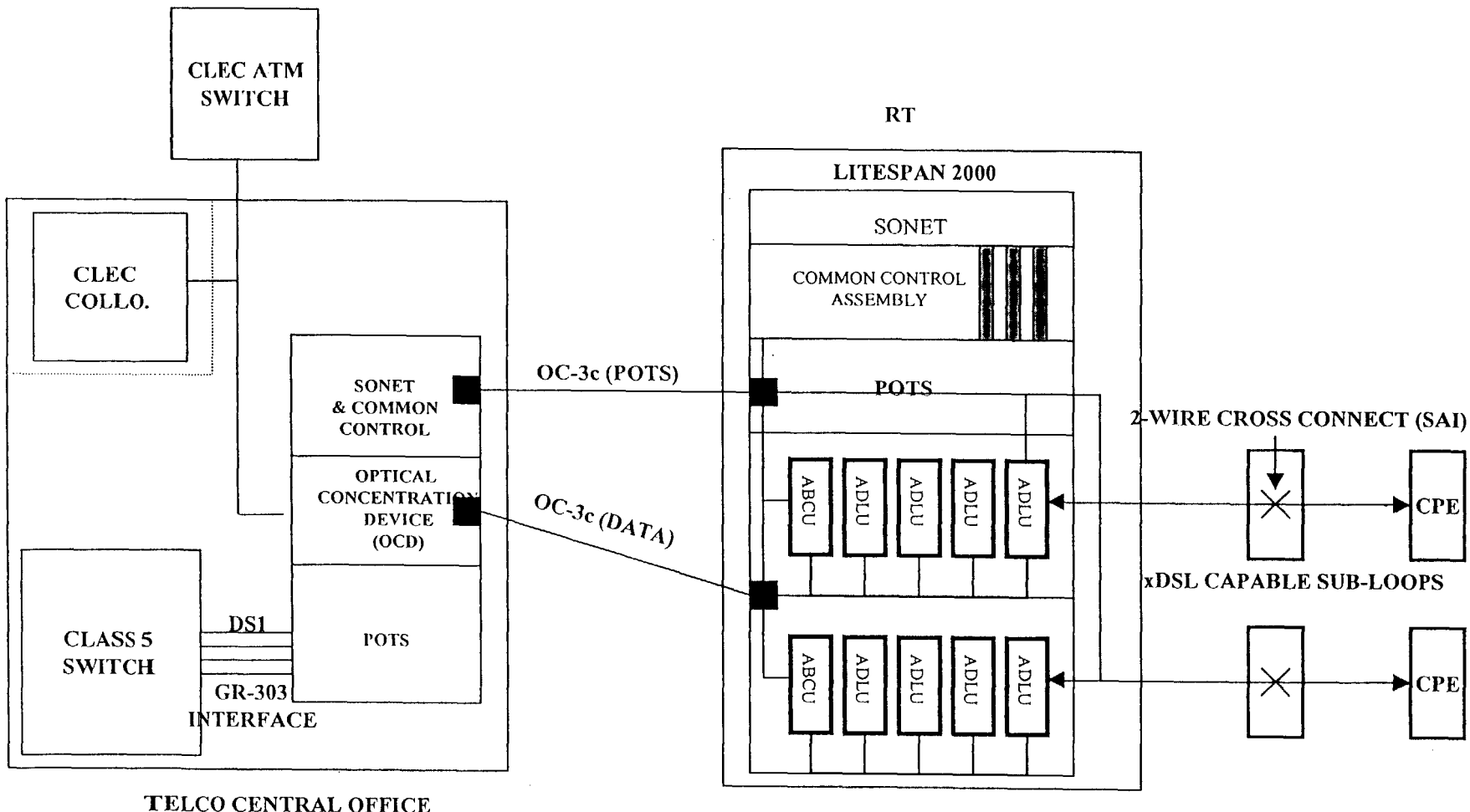
DLE - INFRASTRUCTURE



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PRONTO: PRODUCT OVERVIEW
DLE - INFRASTRUCTURE DEFINTIONS

- **OPTICAL CONCENTRATION DEVICE (OCD)**

  - Optical concentration device (OCD) is a generic term for a device that takes a group of incoming OC3s from multiple remote terminals or DSLAMS and then concentrates the signals into one or more outgoing OC3s.

  - The OCD cross-connect will take incoming ATM packets from multiple OC-3s and multiple remote terminals, depacketize these incoming OC-3s, read the routing information on individual groups of packets and then concentrate (re-packetize) these packets into outgoing OC-3s designated to a particular ATM switch.

- **ADLU COMMON CARD**

  - The ADLU splits the voice from data and provides an functionality similar to a DSLAM.

PRONTO: PRODUCT OVERVIEW
DLE - INFRASTRUCTURE DEFINTIONS

- **OC-3C DATA TRANSPORT**

  - Transmits dedicated OC-3c Data from the DLC to the OCD over common OC-3c fiber.

  - The OC-3c facility will be designed to take multiple packetized data signals outgoing from the ADLU cards placed in the DLC channel banks in a remote terminal, multiplex those packets into a packetized OC-3c signal, and then transport the signal to the OCD.

  - The OC-3c data will transport signals from multiple ADLU cards between the remote terminal and the central office.

  - The OC-3c transport will be similar to common transport in that it will transport packets pertaining to multiple CLECs and multiple end users over one facility.

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DLE - INFRASTRUCTURE DEFINTIONS

- **PERMANENT VIRTUAL CIRCUITS (PVC)**

  - A Permanent Virtual Circuit (PVC) will be necessary from the Litespan equipment in the RT through the OCD device (CBX-500) in the Central Office to the CLEC packet switch.

  - The PVC will consist of a virtual cross-connect placed in the DLC equipment and of an additional virtual cross-connect placed in the OCD.

  - In addition to the virtual cross connects, the PVC will also consist of use of the OC-3c facility and fiber cross-connect between OCD and the RT.

  - An Unspecified Bit Rate (UBR) PVC will be provided to CLECs in conjunction with the use of the OC-3c transport from the RT to the central office.

PRONTO: PRODUCT OVERVIEW
DLE - INFRASTRUCTURE DEFINTIONS

- **OCD PORT TERMINATION**
  - Physical Termination on OCD (CBX-500 ATM Switch) in the Central Office

- **OCD CROSS-CONNECT**
  - A cross-connect will be necessary to the CLECs collocation point from the OCD Port Termination. This will be to either physical or virtual collocation. This cross-connect will be offered from the OCD Port Termination at either the OC-3c or DS3 level. An additional cross-connect can be made to extend the OCD Port Termination to a DSX location in order for the CLEC to pick up their desired form of transport.

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DLE - SBC REQUEST FOR INTREPRETATION OF MERGER CONDITIONS

PRONTO: PRODUCT OVERVIEW
DLE - SBC REQUEST FOR INTREPRETATION OF MERGER CONDITIONS

- **WHY HAS SBC REQUESTED AN INTERPRETATION OF MERGER CONDITIONS?**
  - SBC has requested an interpretation of the Ameritech merger conditions to allow the SBC TELCO's to own some elements of the DLE infrastructure that have been defined in the merger conditions as advanced services equipment. Those elements are the OCD and the ADLU line card.

- **PROPOSALS CONSIDERED**
  - Prior to SBC issuing the request for interpretation, SBC considered three (3) alternatives in relation to the ADLU line card:

  - **PROPOSAL #1**: CLEC Owns the ADLU Card and Ships the Card to the TELCO for Placement in Remote Terminals
  - **PROPOSAL #2:** CLEC Owns Equivalent Plug (Port Level) / TELCO Maintains (ADSL Plug Sharing)
  - **PROPOSAL #3:** TELCO Owns the ADLU Card and Provisions the Card on Behalf of CLECs as Part of the DLE Unbundled Network Elements.

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IMPLICATIONS FOR CLECs

- **PROPOSAL #1 (CLEC OWNS THE CARD/TELCO PLACEMENT)**

  - **PRO:**
  - CLEC Would Control Capacity / Utilization For Cards by RT
  - CLEC Would Have the Capability to Develop New Features For Their Cards
  - Non-Discriminatory Access Via UNE

  - **CON:**
  - Stranded Capacity (4 Ports per Card, CLEC may on the outset be only using 1 port)
  - Limits ADSL Availability in the Remote Terminal Due to Capacity Issue Above.
  - CLEC is required to invest in ADLU Cards and Develop Process to Provide Those Cards to the TELCO.
  - Tax Implications For CLECs to Maintain an Inventory of Cards.
  - Vendor Contracts Would Be Required Between Each Card Vendor and the CLEC.
  - CLEC Ownership Would Lead to a Complex and Expensive Provisioning Process Which Will Lead to a Higher Cost per DSL Loop.

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IMPLICATIONS FOR CLECs

- **PROPOSAL #2 (ADSL PLUG SHARING)**

  - **PRO:**
  - Non-Discriminatory Via UNE
  - CLECs Billed For Ports on Cards as Opposed to Cards Themselves
  - Mitigates Stranded Capacity Impacts
  - CLEC Forecasts Demand Across Wire Center - TELCO Places Plugs
  - CLEC Development of New Feature/Card
  - Maximizes Space By Allocating Ports as Compared to Slots

  - **CON:**
  - Cost of creating administrative process for managing the pool.
  - Billing for ports used.
  - Tax/Investment implications for ports used.
  - Shipping and Confirmation of Receipt of New Plugs for Pool.
  - Available CLEC Port Capacity at any given time.
  - Vendor Contracts Required for Each CLEC.
  - Complex Provisioning Process Leading to Higher Cost and Longer Intervals..

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PRONTO: PRODUCT OVERVIEW
IMPLICATIONS FOR CLECs

- **PROPOSAL #3 (TELCO ADLU CARD OWNERSHIP)**

  - **PRO:**
  - Non-Discriminatory Via UNE
  - CLEC Forecasts Demand
  - Mitigates Stranded Capacity Concerns
  - CLEC Development of New Feature/Card & Facilitates Testing Process
  - Maximizes Space By Allocating Ports as Compared to Slots
  - CLEC Vendor Contracts Are Not Required
  - CLEC Has No Investment Expense
  - Process for CLECs to Provide Cards to the TELCO is Not Necessary - Reduces Costs and Shortens Provisioning Intervals.

  - **CON:**
  - Requires Merger Conditions Interpretation.
  - TELCO Bears Risk/Burden Of ADLU Card Cost and Administration

PRONTO: PRODUCT OVERVIEW
IMPLICATIONS FOR CLECs

- **CLEC CAPABILITIES UNDER PROPOSAL #3:**
  - SBC will unbundle access to the network elements as defined by the DLE infrastructure. This will relieve space limitation problems of having to collocate in remote terminals.
  - CLECs will have the option of collocation as a means of access to the unbundled elements to utilize some form of facility to gain access to these unbundled elements.
  - CLECs will continue to have the option to collocate DSL equipment in new and existing cabinets, CEVs and huts if space and environmental capacity is available.
  - CLECs will continue to have the option to develop new plug-ins with vendors if technically compatible to SBC equipment deployed over the DLE infrastructure.
  - CLECs can purchase the DLE UNEs on a non-discriminatory basis.
  - CLECs will avoid administrative costs associated with plug-in or port ownership.

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UNBUNDLING PLAN

PRONTO: PRODUCT OVERVIEW
UNBUNDLING PLAN

- **ASSUMPTIONS:** The following outlines the PRONTO Unbundling plan based upon the following assumption:

  - TELCO Owns the ADLU Card

- **SCENARIOS:** The TELCO will offer unbundled network elements in conjunction with two typical scenarios differentiated over the copper portion of DLE infrastructure:

  - **Line Shared** - The TELCO will offer a set of UNEs specific to line sharing allowing CLECs who desire to line share over the copper portion of this infrastructure to provision such service.

  - **Data Only** - The TELCO will also offer a non-line shared, dedicated data facility.

- **xDSL PRODUCTS SUPPORTED:**
  - At this time the PRONTO infrastructure will support all forms of xDSL as specified by the DSL appendix. In such instance as the CLEC is line shared, CLEC will be limited to PSD Mask #5 (ADSL) as specified in the line sharing order. For the data only loop, CLECs will have PSD Mask #1 - 7 available over this infrastructure.

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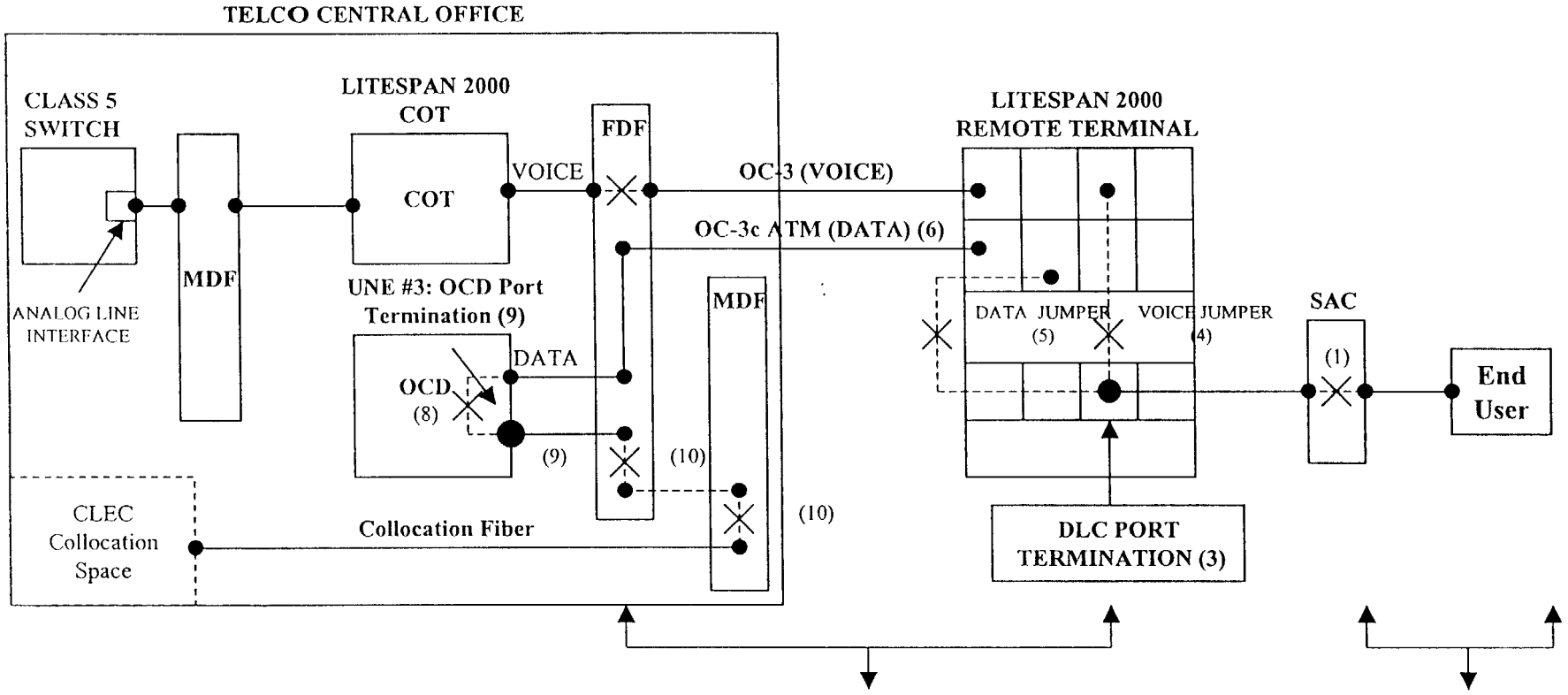
UNE DIAGRAM



(1) DLE ADSL SAC Cross Connect

(2) **UNE DLE-ADSL HFPSL**

(3) DLC Port Termination

(4) DLC Virtual Circuit - Voice

(5) DLC Virtual Circuit - Data

(6) OC-3c Dedicated for Data

(7) **UNE DLE-ADSL Feeder**

(8) OCD Virtual Cross Connect

(9) **UNE OCD Port Termination (OC-3 or DS3)**

(10) OCD Cross-Connect to Collocation (or UDT)

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PRONTO: PRODUCT OVERVIEW

PRONTO UNEs

- **LINE SHARED ELEMENTS:**
  - UNE DLE-ADSL HFPSL
  - UNE DLE-ADSL Feeder
  - UNE OCD Port Termination (OC-3 or DS3)
  - CROSS CONNECTS:
    - DLE ADSL Cross-Connect
    - OCD Cross-Connect to Collocation
    - OCD Cross-Connect to DSX-1

- **DATA ONLY ELEMENTS:**
  - UNE DLE-ADSL Sub-Loop (DATA ONLY)
  - All Other Elements Are Identical To Line Sharing

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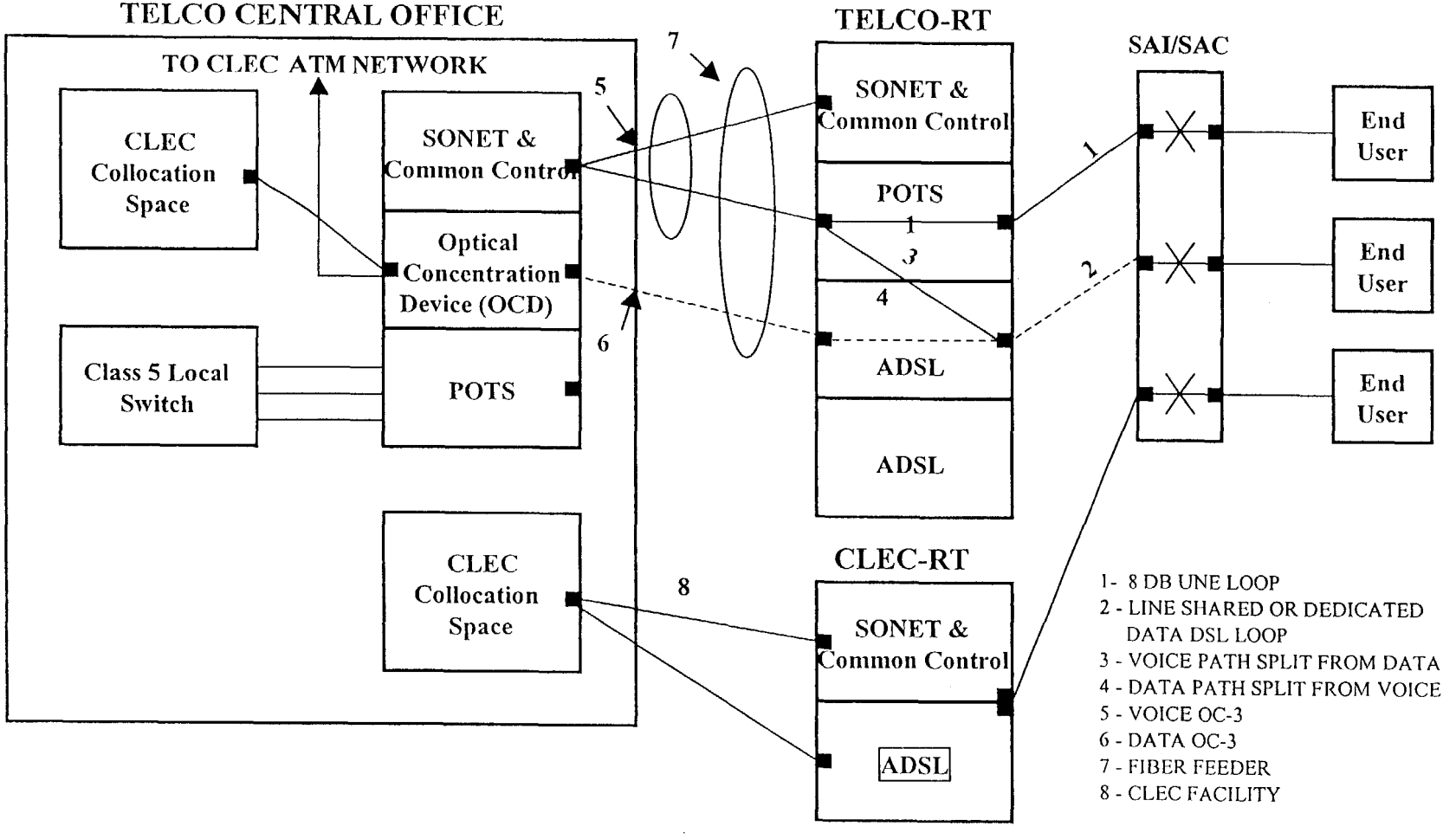
PRONTO UNBUNDLING SCENARIOS



PRONTO: PRODUCT OVERVIEW

HIGH LEVEL SERVICE ORDER FLOWS & BUSINESS REQUIREMENTS

PRONTO: PRODUCT OVERVIEW
HIGH LEVEL ORDER FLOWS

- **STEP 1: INFRASTRUCTURE BUILD**
  - The PRONTO UNEs are divided into two sub-groups: Infrastructure and End User Specific
  - The Infrastructure Elements Consist of the Following: The OCD Port Termination, existing Unbundled Dedicated Transport (UDT) and associated cross-connects.
  - CLECs must establish infrastructure from their ATM cloud to the serving wire center OCD **PRIOR** to placing end user service orders.
  - CLECs will be provided via network disclosure central office and RT locations that are equipped with the DLE infrastructure.

- **INFRASTRUCTURE SERVICE ORDERS**
  - The infrastructure elements will be ordered via one (1) Access Service Request (ASR).
  - In addition to the ASR, CLECs will be required to submit a Customer Information Form (CIF) for each OCD port they purchase. The CIF will contain information such as Virtual Path and Channel Indicators and Connection Types (UNI DCE or DTE) to the OCD.
  - A DS3 OCD port can support a maximum of 1000 end user DSL PVCs and an OC-3 port can support a maximum of 6000 end user DSL PVCs.

PRONTO: PRODUCT OVERVIEW
HIGH LEVEL ORDER FLOWS

- **STEP 2: END USER SPECIFIC ORDERS**
  - The End User Elements Consist of the Following: The DLE-ADSL Feeder and the DLE-ADSL HFPSL or DLE-ADSL Sub-Loop

- **END USER SERVICE ORDERS**
  - The infrastructure elements will be ordered via one (1) Local Service Request (LSR).
  - In addition to the LSR, CLECs will be required to build a profile of services they wish to offer in the TELCO Network Management Systems for both the OCD and the Digital Loop Carrier equipment in the remote terminal. The profile will allow CLECs flexibility in the services they offer to their end users.

- **LOOP QUALIFICATION**
  - A pre-order loop qualification will be required as a triggering event for ordering the DLE end user service. On a loop qual for either a TN or customer address, the loop qual will return that the loop is not DSL capable, but will alert CLECs that a Remote Terminal is available from which to serve the customer and provision a DSL service.

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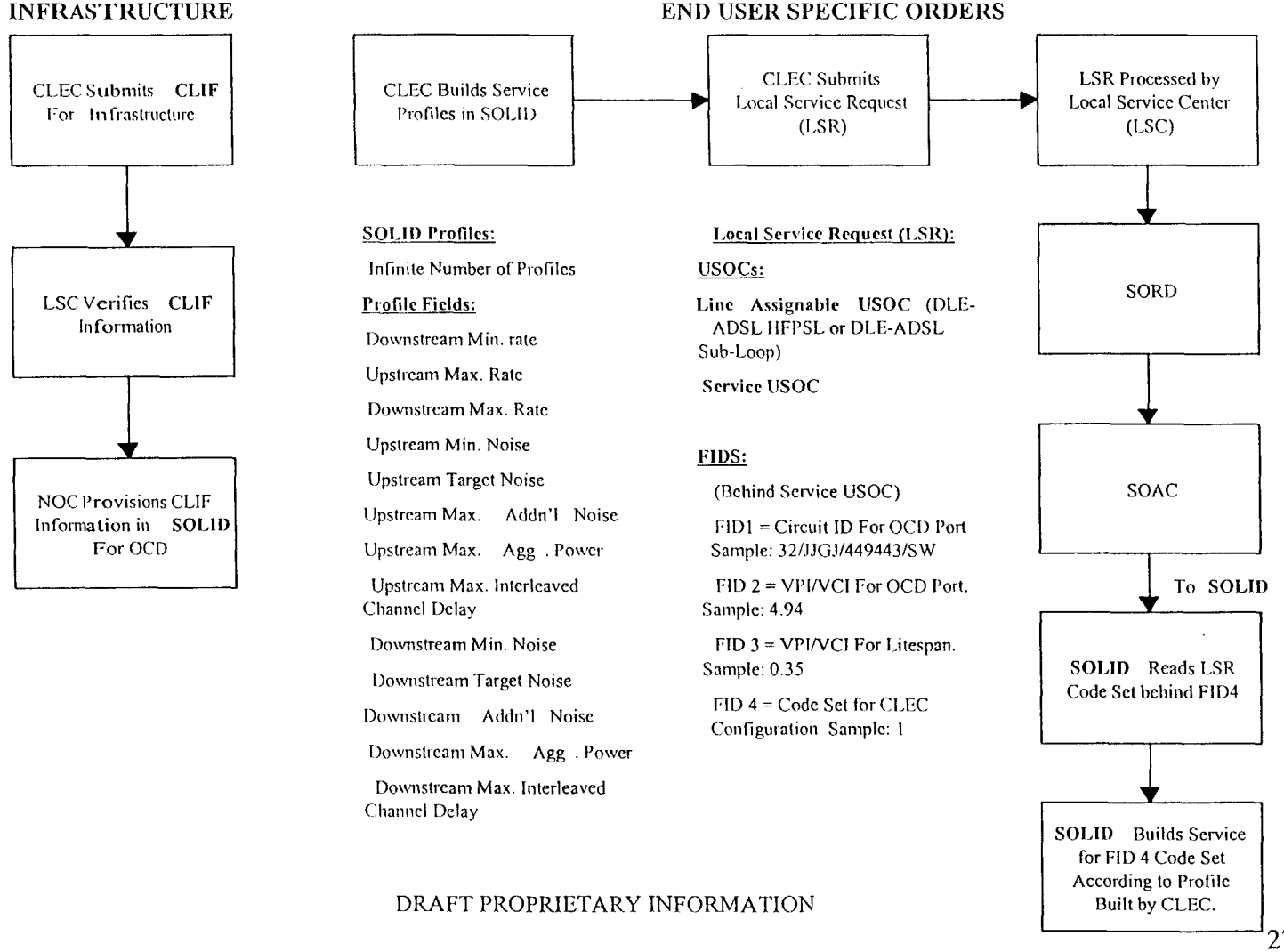
HIGH LEVEL ORDER FLOWS



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UNE RATE STRUCTURE

	RECURRING MONTHLY	NON-RECURRING INITIAL	NON-RECURRING ADDITIONAL
UNBUNDLED ELEMENTS			
DLE-xDSL HFPSL	Yes	Yes	Yes
DLE-xDSL Sub-Loop	Yes	Yes	Yes
DLE-xDSL Feeder	Yes	Yes	Yes
OCD Port Termination	Yes	Yes	Yes
UDT (OC-3 or DS3)- Existing			
	Yes	Yes	Yes
Cross-Connects	No	Yes	Yes
OCD Cross-Connect to DSX	No	Yes	No
OCD Cross-Connect to Collo.			
DLE SAI Cross-Connect	No	Yes	No
	No	Yes	No
Loop Qualification			
Mechanized			
Non-Mechanized			

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BUSINESS REQUIREMENTS & PRODUCT AVAILABILITY

- **BUSINESS REQUIREMENTS**
  - Business requirements including LSR/ASR service order exhibits are not available at this time but are expected to be release in the near future.

- **PRODUCT AVAILABILITY DATE**
  - The DLE UNEs as outlined in this presentation are expected to be made available in the late April- early May time frame dependant upon product development efforts.

- **CONTRACT LANGUAGE**
  - Draft contract language was provided to the FCC in conjunction with the SBC request for interpretation of merger conditions.

- **NETWORK DISCLOSURES**
  - Network disclosure information is available at the following address:
  - www.sbc.com/PublicAffairs/PublicPolicy/pronto_gateways/Home.html